

## INNOVATING CROSS-DOMAIN SOLUTIONS TO DETECT EMERGING BIOLOGICAL THREATS

# DHS S&T Master Question Lists (MQLs) Provide Decision Makers And Stakeholders Reference Information And Needed Information On Traditional And Emerging Biological Agents

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The Hazard Awareness and Characterization Technology Center (HAC-TC) serves as a resource for identifying and characterizing current, emerging, and future chemical, biological, and explosive hazards. HAC-TC is additionally tasked with providing subject matter expertise to execute foundational research to understand their properties and inform Department of Homeland Security (DHS) preparedness against potential future threats, risks, and incidents. The Master Question Lists (MQLs) provide government decision makers and stakeholders with the current state of available information. MQLs uniquely and succinctly inform those who decide operational responses and allow structured and scientifically guided discussions across the federal government in a simple quick-reference design.

The critical questions MQLs address include: “What is the infectious dose?”; “How does it spread?”; “How does it present clinically?”; “How long does the agent persist in the environment?”; and “What are the gaps that still need addressing?” amongst many others. The MQLs prevent duplication of efforts by highlighting and coordinating research across interagency, Department of Defense (DoD), and international partners, with references to open and classified literature. MQLs are specifically designed as living documents, and updated when critical new information is available, in response to a rapidly changing emerging threat (e.g., SARS-CoV-2 or Highly Pathogenic Avian Influenza (HPAI)), or on an annual basis. The MQLs are then published to the DHS Science and Technology Directorate (S&T) public facing website when possible. Current lists include Ebolaviruses, Monkeypox virus, African Swine Fever Virus, Marburg virus, SARS-CoV-2, and HPAI.

To develop MQLs, a broad-based survey of the open-source literature is undertaken for each update cycle for the MQL. Databases searched include, but are not limited to: Scopus, Web of Science, and PubMed. In addition to these databases, agency websites such as the Centers for Disease Control and Prevention, National Institutes of Health, Food and Drug Administration, Environmental Protection Agency, etc. are also reviewed for updates. Search criteria includes preprints when necessary, and initial search terms are defined as “agent + MQL topic area” (e.g., “SARS-CoV-2 AND Chronic Clinical Presentation”). Further search refinement is determined by individual subject matter experts (SMEs), and by mining references.

SMEs assess identified articles for relevance based on scope of the MQL and each topic area towards extracting any relevant data. Relevant data is added to the appropriate MQL topic area and editorial changes are made to improve organization and potentially remove outdated information. Lastly, additional SMEs perform an external review, and randomized confirmatory review of ≥10% of the references in each topic area during each MQL update cycle. The MQLs are available for DHS components, the DoD, and Interagency partners, and will also be hosted on DHS’s Hazard Knowledge Management System to ease access, provide a classified download location, and track download and utilization statistics. Efforts are underway to further share with DHS S&T international partners.